THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 7. FEBRUARY 12, 1944 VOL. 56.

Veterinary Education in the Post-War World*

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During the period of industrial prosperity which followed the last war and which ended in the crash of 1929, the veterinary colleges of this country had few students. During this time, the proprietary schools were forced to close and only the tax-supported ones survived. Shortly after the end of this period and extending throughout the industrial depression which ended with the present war, the schools had all the students they could accommodate and were forced to turn away many others. This occurred in spite of the fact that all the schools increased their entrance requirements in the early thirties. This situation was not limited to veterinary education; perhaps to a lesser degree, all universities and colleges had large registrations during the period of depression. It appeared that the many opportunities for jobs at high wages during the twenties lured most of the high school graduates into industry; the lack of such opportunities during the thirties encouraged them to attend college.

Those of us who are concerned with veterinary education are wondering whether the same phenomenon will be repeated in the next post-war period. If so, there undoubtedly will be a long time during which lack of students will retard further advancements in educational standards. It seems to me that after a short period of maladjustment after the present war, there is quite certain to be a rather prolonged period of what we call prosperity: a period during which jobs will be plentiful, and the wheels of industry will be turning at a fast pace. This war has been, and will continue to be, much more destructive than any previous war. The continents of Europe and Asia will be devastated and despoiled. Cities, factories, homes and public services will have to be rebuilt. Food will have to be provided for hungry populations until they can again establish their agriculture and their livestock industries. The period of toil and sweat will continue long after the end of blood and tears. Everything will be needed.

For this reconstruction, America will have to play a leading role. We will have to supply many of the tools and materials of peace. We will have to continue to supply much of the food. We will have to supply the breeding stock from which the livestock industries can be rebuilt. Our role as the arsenal of democracy will be replaced by another, that of the storehouse of reconstruction. Not only must we supply much for rebuilding the rest of the world, but we will have to do a great deal to meet our own needs. Our living standards have deteriorated greatly during the last year but it is only the beginning. Pre-war stocks of consumer goods have softened the situation so far, but these are rapidly dwindling and we shall face a tremendous backlog of needs of our own by the time that peace again settles upon us. There are those who say that we shall never again attain the high standard of living that we had reached when the present war began. I do not believe this. Our people, with their determination and native ingenuity, will not rest content until previous and even higher levels are reached. As soon as this war is over and talents are turned in this direction, I have confidence that we will rapidly recover what we have lost and reach even a higher level through the agency of the many war-time discoveries, the fruits of which cannot at present be made available to civilians.

Even though we pass through a long period of great business activity after this war, I do not believe that the veterinary schools will suffer so greatly from lack of students as they did after the last war. There may not be as many applicants as there have been in recent years, but I believe there will be more than enough to fill our classes as full as they should be filled. This optimistic view is based upon the difference in the attitude of the public toward the veterinary profession after the last war and now. Twenty years ago the general public was quite ignorant of the importance of the profession, and the opportunities in it for young men of ability. The veterinarian was popularly regarded as a "horse doctor," a useful person but one having little use for a scientific education and hardly a cultured gentleman fit to associate with the better educated portion of the citizenry. The horse was disappearing, as everyone knew, his place being taken by machinery. The public generally believed that the "horse doctor" would go with him as a matter of course.

These ideas have largely disappeared since the previous post-war decade. The tuberculosis eradication campaign brought great publicity to the profession. The development of magnificently equipped small-animal hospitals made a profound impression on our urban populations. The groups of young men graduated by our veterinary schools during the last two decades, with better basic and professional educations, and with higher ideals, has had a favourable effect upon livestock men. The inclusion of veterinarians with physicians and dentists in the Procurement and Assignment programme of the War Man-power Commission and of veterinary students with medical and dental students in the Army Specialised Training Programme has not escaped the attention of the public. The general public is now aware of the fact that veterinary medicine is a necessary and honourable profession requiring scientific knowledge and skill, and that its practitioners are men of good breeding and training and not the racing touts, jockeys and stable men that constituted some of the "horse doctors" of an earlier age.

The raising of entrance standards of the veterinary schools to include one year of pre-veterinary collegiate work also has had much to do with raising the profession in the esteem of the public. Apparently, the harder the path to a goal is made the more it is desired and sought after. It was amazing to see how rapidly it became generally known, in the early thirties, that veterinary schools were hard to get into, and how this suddenly made them very desirable goals.

After the war, I believe that the time will be at hand for all veterinary schools to improve still further their educational standards. I am sure the public is ready for such a step, that it would further enhance the prestige of the profession, and that it would not be impossible to persuade our states to provide the additional financial support which such a step would require. Advancing educational standards in this country have included farmers and other owners of livestock. Many farm boys are going to college, farm bureaux and other governmental agencies are active in disseminating information to our rural populations and the superstitions and hocus-pocus about diseases of farm animals are disappearing. These people are interested in having accurate diagnoses of the diseases of their livestock, and they want to prevent disease, so far as possible, rather than to attempt cures after damage has been done. This means that a more exacting clientele is developing. It means that veterinarians will have to "deliver the goods" if they are to survive and prosper. It means, in short, that veterinarians are going to have to be more proficient in their work and sounder in their knowledge than in the past. And this means closer selection of students in the first place, and better education for them in the second place, if the profession is to measure up to the standards that will be expected of it.

Improvement of educational standards can take place in two directions, namely, by improving our teaching methods, and by increasing the time devoted to the professional education.

TEACHING METHODS

Those who are acquainted with our teaching institutions know that in all of them we are still far behind the better medical schools in our teaching methods. This is due in part to the fact that we do not have, and probably never can expect to have, even in the best supported of our veterinary schools, the small instructor-student ratio that exists in the medical schools. The nearer we can approach this ideal the better teaching we shall be able to do. But some of the veterinary schools of to-day are accepting classes that are far too large for their staffs and facilities, and some of the largest classes are to be found in the weaker schools. Good mass instruction can be given in few fields and least of all in those in which the students must develop manual skill as well as mental training. Mass instruction means, inevitably, "learning from the book," and while book learning is an indispensable part of medical education, it is not a satisfactory substitute for learning from actual contact with patients, and for learning by doing things instead of reading about them. The bedside method of teaching long ago supplanted purely book and lecture teaching in medical schools. It is apparent that progress in veterinary schools is somewhat lagging in this respect.

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* Presented before the War Conference at the Annual Meeting of the American Veterinary Medical Association, St. Louis, Mo., August 25th-26th, 1943. Reproduced from the *J.A.V.M.A.*, **103** (November, 1943).

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In the post-war period when the veterinarians who are now in the Army Veterinary Corps return to civil life there will be no serious shortage of men in the profession. There will be no need then, so far as I can see, for schools to cram into their classrooms all the students that they will hold. It will be much better for the livestock industry, as well as for the profession itself, if all schools would reduce their student bodies until their numbers bear a definite ratio to the number of available instructors. I do not undertake now to say what this ratio should be, but it is smaller than now obtains in any of our schools. Our country is more in need of good veterinarians than it is of larger numbers of half-trained ones.

Another serious fault in our teaching methods is that we still fail, in large measure, to carry over into our clinical teaching much of the basic scientific knowledge which the student spends most of his first two years in acquiring. The result of this is that we turn out too many graduates who do not know how to apply their fundamental sciences and these are rapidly forgotten, the individual then being not much better than a quack. It is disheartening to see how often this occurs even in members of very recent classes. It is discouraging to note how often some of these men mishandle cases, or give bad advice to owners of livestock, or make ridiculous diagnoses because of their ignorance. More and more as the educational standards of farm people rise, clients are able to detect these blunders and the prestige of the man and his profession suffers accordingly.

The principal cause of this teaching fault is that our clinical instructors, with exceptions of course, are men who have faulty educational backgrounds themselves. Many of them were educated in the old schools in which the basic sciences were subordinated to practical work; in which the science of veterinary medicine played second fiddle to the art of veterinary medicine. Very few of our clinical teachers have had graduate work, and few have had more training in the basic sciences than the scanty amount that was given in our veterinary courses a few years ago. Under such circumstances, we can hardly expect anything more than we are getting. Such men are apt to defend the empirical methods that they use and teach by saying that it is not practical to employ the techniques of chemistry, physiology, endocrinology, bacteriology, and haematology for diagnosis and control of treatment in veterinary medicine. There is something to be said for this view, of course, inasmuch as economic considerations play a much greater part in the practice of veterinary medicine than in human medicine. If we must accept this verdict, however, it means that veterinary medicine must forever resign itself to continue on an unscientific basis. I do not think we have to accept this verdict. We must do away with a lot of empiricism which exists to-day, and we can do that only by using the precise methods which medical science has provided and is providing to enable accurate diagnoses to be made and treatment administered.

Even though it be true that practitioners often may be unable to apply many special techniques which enable more accurate diagnoses to be made and treatments to be more accurately controlled, I believe we are failing in our teaching mission when we do not teach our students what these methods are capable of contributing. Small clinical staffs and large numbers of students are difficulties, of course, but we should strive, as I have already indicated, to re-adjust this ratio to improve the situation.

During the latter part of their education, medical students who are grounded in their fundamental sciences are required to begin applying these methods in the clinical wards. All patients are thoroughly studied by the students under the direction of clinical instructors and internes, and complete case histories are written. These include not only the histories obtained from the patients, but the results of the physical examinations and laboratory tests that are done. In obscure cases, urinalyses, blood counts, blood chemistries, functional tests, x-rays, bacteriological examinations, biopsy examinations and numerous other tests are routinely conducted even though the clinical history does not suggest that all of these examinations are necessary. Surprises often are discovered in these elaborate examinations, some of the apparently unnecessary tests revealing unsuspected facts that lead finally to the true diagnosis which would not have been reached otherwise. Also, when treatment is undertaken, the course is followed in many cases by tests which indicate whether it is accomplishing what is intended, whether the dose is adequate, inadequate, or too great, an example being the following of the blood level of the sulphonamide drugs. Even if it is impossible or impracticable for practitioners of veterinary medicine to carry out such detailed examinations on their cases, a fact which I do not think we should admit, students in colleges will benefit immensely by being required, as part of their professional training, to learn how they are done by applying them to patients. Not only would the students benefit, but the clinical instructors undoubtedly would learn much more about their cases, make more accurate diagnoses, and our fund of information about animal diseases would be greatly augmented.

The Extended Course

I have already said that I believe the time will be at hand shortly after the end of the war further to increase our educational requirements in veterinary medicine. This matter has been under consideration by most of the veterinary faculties for some years but, except for the School of Veterinary Medicine of the University of Pennsylvania, none has taken action on it.

I believe that when extension of the veterinary educational programme is considered, faculties should weigh the merits of requiring an additional year of preparatory work against those of an additional year in the professional programme. Both are capable of improving the quality of our graduates, but I am inclined to favour the second scheme as likely to yield the better returns.

It will be noted that I am assuming that no faculty will wish, in the near future, to extend the basic training in veterinary medicine beyond five years, or one more year than is required at present. This would demand six years of college work, which might be compressed into four by the elimination of long vacation periods, and this should be sufficient for the training of practitioners. Those who wish to specialise in any of the fields encompassed by veterinary medicine in order to become teachers or research workers should look forward to graduate work leading to the Ph.D. degree. This would require one or possibly two more years.

A six-year professional programme is not suggested. It seems to me that the choice lies between the two-year pre-professional followed by a four-year professional programme on the one hand, and a one-year pre-professional followed by a five-year professional programme on the other. Veterinary students certainly should have not less than one year of a broad general education at the collegiate level upon which to build their professional educations. Before admission to the professional school, it is important that they should have demonstrated their ability to handle college work and particularly such work as chemistry, English and zoology. The ten years of experience we have had in selective admissions has demonstrated the fact clearly that the improvement in scholastic ability which we have obtained in our student bodies has been due, in part, to their better basic educations but to a much greater degree to the opportunity that we have had to choose tried and capable students, and largely to eliminate in the beginning those who failed to demonstrate their scholastic competence in their pre-veterinary collegiate year.

A Second Pre-veterinary Collegiate Year

Present graduates in veterinary medicine seldom receive as much training in mathematics, chemistry, physics, genetics, and nutrition as they should have to enable them to hold their own with the better trained agriculturalists. In addition, they should have work in economics, history, and other social sciences to enable them to take their places among educated people in general. It must be borne in mind that the curricula of veterinary schools do not confer general educations; that they must, of necessity, be limited to very narrow fields. In general, the public is not able to judge accurately of the intelligence and intellectual attainments in this specialised field and has recourse to its own standards of a more general nature. Professional men who cannot give a fairly good account of themselves among educated people are bound to suffer on this account, and the profession as a whole suffers likewise.

If the decision is made to recast the pre-veterinary training and place it on a two-year basis, many of the subjects mentioned could be included, and others could perhaps be absorbed into the professional curriculum in place of the few general topics that the latter now contains. This plan, however, would not lessen the present congestion in the professional programme, nor allow for pointing the teaching more directly toward the patient than is now the case. For these reasons, I believe that a straight five-year professional programme, based upon one year of general college preparation, is preferable to two years of general preparation followed by four years of professional work.

A Five-year Veterinary Curriculum

Students in our veterinary colleges find their time pretty completely occupied. During the eight terms at Cornell, for example, veterinary students are required to complete 149 semester hours of work. Students of arts and sciences in the same university are required to complete only 120 hours for the B.S. or A.B. degree; therefore, it may be said that the veterinary students are required to complete the equivalent of five years' work in four, or of ten terms in eight. Under such conditions, it is unthinkable to add additional courses or give more time to present courses. But we need to include additional work in nutrition, and expanding fields, such as that of the virus diseases and parasitology. These subjects call for more thorough training than can be given in the number of hours which were allotted to bacteriology and parasitology some years ago when these fields were much less complicated and information much scantier than

now. I believe that some time could be saved in present curricula by reducing the time spent in detailed dissections in anatomy which are soon forgotten and seldom used anyway. Examination of the curricula of all leading medical schools indicates that dissecting time has been reduced markedly, in many cases the reduction amounting to more than 50 per cent. in the last 25 years. Some veterinary schools have reduced their dissecting hours considerably, but others continue on the old basis. In any event, with drastic reductions, the time saved would not provide the opportunity of introducing into the teaching programme all of the subjects that should be incorporated.

During our present four-year curricula, the student is given practically no time to work independently. He must go from class to class on a fixed schedule. He must prepare fixed class-room assignments almost until the day of graduation. Until the bitter end, he must continue to cram his mind with new facts from his text-books and is given little time to learn how to apply these facts to patients. True, he attends clinics but in these he is largely an observer. He seldom finds it possible to follow closely the developmental history of individual cases because he must rush off to other classes and may not get back to the cases until a day or two later. He may not be able to attend the autopsy of a fatal case which he has followed during its sojourn in the hospital. This type of teaching once prevailed in all medical schools but it has been replaced by another type which I believe will have to be introduced into veterinary schools if we are to train better clinicians.

The case method of clinical teaching which the medical student gets during the latter part of his medical course and his year of internship, is a reversal of the type of teaching which he has received during the earlier years of his training. During the earlier years, he has studied books and in the laboratory he has studied methods and techniques of the sciences upon which medicine is based. Now he studies patients, applying all of the techniques, methods, and diagnostic procedures which he has learned previously. During this period, he is expected to spend virtually his full time in following the course of the patients which pass through the clinics. He is required to attend few classes. He is free to spend as much time as is necessary, or as he wishes, in acquiring skill in making diagnoses and in applying remedial measures, under the direction of competent teachers. He makes blood counts, chemical determinations, bacteriological examinations, and any other procedures that are likely to throw light on the nature of the ailment or give indication of the progress of the treatment applied. In case of death, he makes the autopsy and carries out significant *post-mortem* examinations. He writes up the entire history of the patient and his treatment. He reports anatomical findings, *ante-mortem* and *post-mortem*. He attends clinico-pathological conferences at frequent intervals in which students present their cases, and hear discussions about them from the various clinical instructors and members of the department of pathology who have had anything to do with them.

Successful operation of this plan requires a low student-instructor ratio, for independent work upon patients requires careful supervision. It demands instructors who are freed from practically all class-room teaching. For its operation in veterinary schools, this is the principal catch; the schools do not have enough men to operate in this way. But if this manner of teaching is capable of much better results than our present way, we must seek to move in this direction by persuading fiscal authorities that larger investments in the educational process will yield correspondingly greater returns.

Some will say that all this is visionary and impracticable. I will reply by saying that no progress has ever been made in any field except when it has been preceded by thinking which, at the time, seems visionary. If we are to work toward making our profession a better one for those who are members of it, and for those whom it serves, we must know where we are going. We must choose the star to which we hitch our wagon in order that a straight course can be laid. Even though progress may be slow and halting, it should be in the right direction. For veterinary medicine, the same principles apply as in medicine. Fortunately for us, the experience in medical education is available, and we should utilise it in setting our own course.

Weekly Wisdom

One can every day meet ardent "democrats" who thunder against what they call out-of-date party politics, who cry for purges and the outlawry of their opponents, . . . Unless we recognise these people in time for what they are, democracy may still have lost its battle against tyranny in Europe, even though Britain will have won her war against Germany.—"The Observer," December 26th, 1943.

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At a meeting of the Farmers' Club to be held on Monday, February 14th, 1944 at 2.30 p.m., at the Royal Empire Society, London, W.C.2, a paper will be read by Mr. A. P. McDougall, C.B.E., entitled "Increasing the Cattle Population."

CLINICAL COMMUNICATION

Operation for Ectopic Testicle in the Bull

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Subject.—A pedigree shorthorn bull, aged five months.

Clinical Findings.—The right testicle had descended through the inguinal ring, but had then been deflected from the scrotum and was in a subcutaneous position on the abdominal floor lateral to the penis. This condition had been frequently met with in animals presented for castration, but no record could be found of any attempt to correct it in breeding animals. The animal was a valuable one, so an operation was decided upon.

Surgical Technique.—Twenty c.c. of chlorocain were given epidurally and the animal cast with the right inguinal region exposed. The skin of the region was anaesthetised by infiltration. Under the usual aseptic precautions, an incision about 4 inches long was made over the inguinal ring and the testicle exposed. The adhesions of the spermatic cord were broken down well up into the canal, until the testicle and cord for some length were free and unattached. Next, the scrotal fat was broken down until the sac was open and free. A catgut suture with a needle at each end was then passed through the tunic at the distal end of the testicle. Both needles were passed through the floor of the scrotum from within out, and the testicle drawn into the scrotum. The ends of the suture were tied on the outside and the original wound sutured with silk.

Sequelae.—There was a great deal of swelling in the region which persisted for some time, but eventually settled down leaving the testicle in a normal position, though carried somewhat high. The bull was passed at a year old and has now got several heifers in calf.

ABSTRACTS

[Tuberculosis of the Bovine Udder. Stamp, J. T. (1943.) *J. comp. Path.* **53**. 220-230.]

Although Nieberle and others on the Continent have carried out a considerable amount of work on the pathology of udder tuberculosis there has been little published on the subject in this country since M'Fadyean's account as long ago as 1917. The present article describes the gross and histological findings in twelve cases of udder tuberculosis which were encountered among an unselected series of 27 cattle slaughtered and found to be affected with "fairly widespread tuberculosis." [There is unfortunately no information as to the extent and distribution of the tuberculous lesions in organs other than the udder and supramammary lymph nodes. A complete examination of all tuberculous lesions in a fairly large series of cattle with udder tuberculosis would be of considerable value in enabling the pathogenesis of udder infection in relation to tuberculous lesions in other situations to be elucidated.] Continental workers are generally agreed that the udder is practically always infected by haematogenous spread from primary tuberculous lesions in the respiratory or alimentary tract. Stamp favours this view and found no evidence to support M'Fadyean's contention that the udder is infected by lymphatic spread.

The material was examined by cutting the udders into thin slices, examining stained smears of the cut surfaces from all four quarters and preparing histological sections from blocks of tissue from various regions (at least twelve blocks from each quarter).

If naked-eye examination alone had been used to detect udder tuberculosis three of the twelve cases would have been missed and probably an additional three which were only regarded as being suspicious. It is most probable that not more than half of the cases would have been recognised as tuberculous by the ordinary methods of meat inspection. Examination of stained films of the cut surface of the udder and lymph node was a reliable method of diagnosis; examination of frozen sections stained to show the tissue changes, a method widely employed in Germany by Nieberle and others, is also both reliable and rapid.

The supramammary node showed gross evidence of tuberculosis in only five animals (including a 13th case in which no tuberculous lesions were found in the udder), but five further cases were detected microscopically.

The author classifies the twelve cases into four types, according to the character of the lesions—Type 1: acute caseating (two animals); Type 2: chronic diffuse granuloma (2); Type 3: chronic

nodular (6); Type 4: diffuse tuberculous galactophoritis without nodules (2). [It is perhaps doubtful whether a classification of only twelve cases into as many as four types is justifiable: it would appear that Types 2 and 4 represent Nieberle's "chronic infiltrating udder tuberculosis", the form which he states comprises 80–90 per cent. of all udder tuberculosis.]

It is stated that Types 1 and 2 are probably fairly easily diagnosed. [This would not be so, however, if gross involvement of the supramammary node is taken as a criterion of udder tuberculosis since in three of the four cases in Stamp's series it was free from macroscopic lesions. In fact the only type of udder tuberculosis in which the local lymph node is practically always grossly enlarged and tuberculous is acute caseating tuberculous mastitis, only two cases of which were encountered in the present series. Palpation of the udder and supramammary nodes will certainly fail to detect many cases of udder tuberculosis and even naked-eye examination of the udder and node at slaughter is unreliable unless carried out by persons acquainted with the strikingly "non-tuberculous" appearance of the chronic granulomatous changes in the common form of udder tuberculosis. To have failed to detect tuberculous mastitis on naked-eye examination of a sliced udder, only to find tubercle bacilli in films and typical changes in sections, is perhaps the best way of learning to recognise the condition.]

Tuberculous invasion of the ducts was a striking feature in all the cases examined by Stamp. The earliest lesions in the ducts often seemed to be non-specific but soon developed typical tuberculous features. Spread of the tuberculous process through the udder tissue probably occurs mainly by the ducts and the author even suggests that the ducts may be primarily infected and that tuberculosis of the gland parenchyma may be secondary to lesions in the ducts. The early and extensive involvement of the ducts shows that even the earliest cases of udder tuberculosis may result in infected milk. Furthermore, even in advanced involvement of the udder there are always relatively normal secreting lobules within tuberculous quarters. Stamp's work shows the ease with which tuberculous milk may get into the milk supply, the importance of using more reliable methods of diagnosing tuberculous mastitis, and, finally, the difficulty in diagnosing udder tuberculosis even at slaughter unless microscopical methods (smears, sections) are employed.

E. G. W.

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[An Outline for Diagnosis of Poultry Diseases. Lee, C. D. (1943.) *N. Amer. Vet.* **24**. 227-233.]

The outline applies to the diseases mentioned as they occur in America; it is admittedly incomplete, but the following summary may assist in diagnosis.

1. *Coccidiosis.*—(*a*) Three weeks to six months of age: emaciation, diarrhoea, sometimes blood-stained. Intestines thickened, show white areas pinhead to ½ inch diameter. (*b*) Over ten months: less severe, rarely haemorrhagic enteritis. Diagnosis by demonstration of coccidia. (Fowls, ducks, geese.)

2. "*B.W.D.*"—Usually at eight to 16 days of age. Anorexia, wasting, early death. Diarrhoea not always seen. Small white foci seen in heart, gizzard, intestine, liver, spleen, lungs. Yolk often incompletely absorbed. (Fowls.)

3. *Fowl Typhoid.*—Most losses in young. Weakness, jaundice, diarrhoea, death in one to seven days. Enteritis, bronzed liver, white nodules, especially in myocardium. Typhoid is the only acute infectious disease of chickens over two months old in which the spleen is enlarged. (Fowls.)

4. *Fowl Cholera.*—(*a*) Septicaemic form. Rapid death. Petechiae on serous membranes; liver often shows pale streaks. Yolk-like exudate in peritoneal cavity; acute duodenitis. (*b*) Localised forms. Roup, otitis media, wattle oedema, arthritis, peritonitis. (Fowls, ducks, geese, turkeys.)

5. *Respiratory Diseases.*—(*a*) Colds (roup). (*b*) Pox. Cheesy pseudo-membranes in mouth, pharynx, or larynx, or warty lesions on head. (*c*) Infectious bronchitis (tracheitis). Rapidly contagious. Death often due to tracheal plug of blood-stained exudate. May find pseudo-membranes in mouth. (Fowls, turkeys.)

6. *Tuberculosis.*—Usually observed in birds over one year old. Often show lameness, severe diarrhoea, emaciation. Lesions are nodular, encapsulated, and have a necrotic, purulent, caseous, or calcified centre. (All species; not uncommon in turkeys, rare in geese.)

7. *Internal Parasites.*—(*a*) Air-sac mite. (*b*) Subcutaneous mite. (*c*) Intestinal parasites. (All species.)

8. *External Parasites.*—Lice, mites. (Seldom in ducks.)

9. *Non-specific Enteritis.*—May be fatal, but chiefly results in unthriftiness. (Fowls, ducks, geese.)

10. *Nutritional Diseases.*—(*a*) Leg weakness, due to lack of sunshine, vitamins, minerals. (*b*) Inflammation of eyes. Glueing of eyelids by exudate; this should be removed. (*c*) Avitaminosis-A. Emaciation. Small raised ulcerative areas in mouth, oesophagus, crop. (*d*) Visceral and articular gout. Associated with high protein diet and confined quarters. (All species.)

11. *Fowl Leukosis Complex.*—Very variable symptoms and lesions. May find tumour-like masses in liver, spleen, ovary, etc., or lesions in the eye (grey irregular iris) or nerves (lameness). (Fowls.)

12. *Poisoning.*—Diagnosed by detecting poison, or by eliminating other causes, in cases of sudden death in previously healthy flocks. (All species.)

13. *Non-specific Diseases.*—*E.g.*, abscesses, pericarditis, pneumonia, septicaemia, sinusitis, hepatitis, nephritis, gout, paralysis, egg concrement, myocarditis, rupture of yolk, injuries.

14. *Infectious Hepatitis.*—(The name "blackhead" is misleading, as the head is not always black.) Liver shows depressed, circumscribed, necrotic areas; caeca distended by blood-stained cheesy material. (Turkeys.)

15. *Paratyphoid.*—In young turkeys mainly, sometimes in chicks and ducks. Disease appears suddenly, and is rapidly fatal. Caeca distended by exudate, but no necrotic lesions in liver.

E. C.

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[The Antigenic Structure of British Strains of Swine Influenza Virus. Glover, R. E., and Andrewes, C. H. (1943.) *J. comp. Path.* **53**. 329-341. (22 refs.).]

An Irish and an English strain of swine influenza virus were established in ferrets and mice by intranasal passage of extracts of respiratory tissue. These were compared with a strain of American origin (Shope) and with a standard human A virus (PR8). Four methods were adopted: the neutralizing power of ferret anti-serum against each strain was compared; mice vaccinated intraperitoneally with live virus were subsequently inoculated intranasally with homologous and heterologous viruses and comparisons made of the protection afforded; depending on the fact that large 1./p. injections into mice of live virus result in the presence of virus in the lung tissues 48 to 72 hours later, a method was elaborated to compare the concentrations of virus in the lungs of previously vaccinated mice when injected 1./p. with large amounts of virus of the different strains; and finally, the degree of inhibition of agglutination by anti-serum in the chick red-cell agglutination test was determined for homologous and heterologous strains. The results by these methods were not fully consistent but it appeared that the British strains were somewhat closely related and intermediate between human A strains and Shope's porcine strain.

A. W. G.

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[A Search for Diagnostic Symptoms and Lesions in a Variety of Small Experimental Animals after Administration of Swine Fever Tissue Suspensions by Different Routes. Muir, R. O. (1943.) *J. comp. Path.* **53**. 237-244.]

The author studied the symptoms produced in mice, hamsters, ferrets, white rats, guinea-pigs and rabbits after injection of swine fever tissue suspensions by various routes and the histological reaction in the brain of these species after intracerebral inoculation. Although no result in any test animal was deemed of diagnostic value the brain lesions were more persistent in rabbits and guinea-pigs.

Muir suggests that a method of concentration of a purified virus (freed of tissue) seems necessary before continuing these tests.

C. V. W.

REVIEW

[Substitute Feeding Stuffs. Growmore Bulletin No. 8. M. of Agri. and Fisheries. H.M. Stationery Office. 3d. net.]

This Bulletin has been prepared by Dr. J. Duckworth from the Rowett Research Institute, Aberdeen, and is intended to give somewhat brief but useful information upon a variety of what may be classified as emergency feeding-stuffs.

Nearly all those mentioned have been fed under practical conditions to various classes of stock, and notes on how they should be used and any precautions that ought to be taken are given. The range of these foodstuffs included is perhaps indicated by mentioning substances as different as acorns, biscuit waste, bracken roots, distillery dreg, gorse, heather, horse chestnuts, nettles, reeds, seaweed, straw, sugar-beet leaves, swill, tulip bulbs, and whey, which are some of those discussed.

The Bulletin should be useful to veterinarians to enable them to give useful advice to stock-owners who may wish to feed these emergency foodstuffs.

QUESTIONS IN PARLIAMENT

Agriculture: Government Policy

Mr. Driberg asked the Minister of Agriculture if it is proposed to formulate and make public the Government's long-term policy for agriculture as soon as possible after the conclusion of the present discussions with the industry or to wait until after the end of the war in Europe.

Mr. R. S. Hudson: As I stated on October 28th the discussions will be concerned with policy both in the transitional period and in the subsequent period; they will be exploratory and confidential and reports will be made from time to time to the War Cabinet on their progress. They will have to cover a wide field and I cannot say when it may be possible to make announcements on the various aspects of the problem.

Mr. Driberg: Is the right hon. Gentleman aware that one phrase which he used in his speech in the recent debate caused some disquiet by suggesting that the formulation of policy would not take place until after the war; and will it not be necessary to relate this policy to the Government's general reconstruction and planning proposals which are to be discussed, we hope, this Session?

Mr. Hudson: I think my right hon. Friend had better let me see how I get on with the discussions before pressing me too far.

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Pig Production

Mr. E. P. Smith asked the Minister of Agriculture whether he is aware that there is considerable anxiety in the pig-producing industry as to its future in post-war years; and whether he will give an assurance that no action is contemplated which will not give opportunity for its possible expansion after war, in view of its great value and because it is a principal source of manurial humus.

Mr. Hudson: As my hon. Friend will be aware, the whole question of post-war agricultural policy is the subject of exploratory discussions with representatives of the industry. The future of pig production will be considered in the course of those discussions.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Feb. 16th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 2.0 for 2.15 p.m.

Feb. 19th.—Meeting of the Society of Women Veterinary Surgeons at Liverpool, 2 p.m.

Feb. 23rd.—68th Annual General Meeting of the Eastern Counties Division, N.V.M.A., at Norwich, 2 p.m.

Feb. 23rd.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington, 2 p.m.

Feb. 25th.—Annual General Meeting of the Lancashire Division, N.V.M.A., at Manchester, 2.15 p.m.

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R.C.V.S. Council Election

The next election of Council will take place on June 6th at the Annual General Meeting, which will be held at 16, Bedford Square, London, W.C.1.

The following members are due to retire, but are eligible for re-election and have again been nominated: W. Nairn, P. J. Simpson, W. K. Townson, A. B. Mattinson, J. F. D. Tutt and C. A. Murray.

There are three other vacancies caused by the deaths of Professor Craig, Mr. Livesey and Colonel Mulvey, and one caused by the resignation of Sir John Kelland.

The following additional nominations have been received to date: N. S. Barron, T. J. Bosworth, A. D. J. Brennan, R. E. Glover, G. N. Gould, R. C. G. Hancock, T. Hare, W. H. Kirk, J. D. Peele, L. P. Pugh and A. W. Stableforth.

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The Veterinary Educational Trust

At a recent meeting of Trustees and Council a letter was read from Colonel Edward Curley, Officer-in-Charge, United States veterinary personnel in the European Theatre of Operations, intimating that, as a token of their appreciation of the warm welcome they had received from their British colleagues, they had contributed jointly a sum of £70 to the Trust. This fraternal gesture was enthusiastically acclaimed.

At the same meeting it was unanimously resolved that the Presidents of the R.C.V.S. and of the N.V.M.A. be asked to be *ex-officio* members of Council.

The Duke of Beaufort, Treasurer, reported that the funds of the Trust now stood at over £140,000, and the President announced that it was not proposed to await the collection of the full capital sum aimed at before carrying out the objects of the Trust. Already one research Fellow had been elected and it was proposed to elect three more in the coming year, together with some undergraduate scholars. One student, who might not otherwise have been able to complete the course owing to sudden financial difficulties, had been materially assisted by a grant from the Hobday Memorial Fund, now a subsidiary Trust administered by the Veterinary Educational Trust.

Various plans were discussed for securing contributions both large and small towards the capital of the Trust. The address of the Trust is 40, Westminster Palace Gardens, Artillery Row, London, S.W.1.

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Revision of Control Scheme

As announced in our issue of January 29th, it is proposed in the near future that representatives of the Ministry of Agriculture, the National Veterinary Medical Association and the National Farmers' Union shall meet to review the working of the scheme for the control of certain diseases of dairy cattle. The Association is anxious to receive the views of members on this matter and, in order to assist in the collation and analysis of members' replies, the following questions are suggested; information on any aspect not included, however, will also be appreciated:—

1. Has the control scheme resulted in fuller collaboration in disease control generally?
2. Has the operation of the control scheme resulted in an increase of professional work on the farm in respect of diseases not included in the scheme?
3. To what extent has the publicity afforded to the control scheme resulted in an increased demand for the application of control measures outwith the scheme in respect of mastitis, contagious abortion infertility (including pregnancy diagnosis) and Johne's disease?
4. In connection with which of the four diseases do you consider the control measures have been most successful?
5. Please state briefly the reasons which, in your opinion, have contributed to the success or failure of the control scheme.
6. Can you suggest any improvement in the working of the control scheme in general, and particularly as it affects (*a*) the Ministry, (*b*) the practitioner, and (*c*) the farmer.
7. Do you consider that the present scheme could with benefit be extended to include control measures for other diseases and/or other classes of animals? If so, state which.

It is hoped that members will endeavour to make their criticisms helpful, whether they be of a constructive or destructive nature.

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R.C.V.S. OBITUARY

Bull, William Alban, "Glenbank," 8, North Bar, Banbury. Graduated London, December 19th, 1895. Died February 27th, 1944; aged 72 years.

Farrant, Antonio L., F.R.C.V.S., Major late C.M.R., B.C. Horse, The Rest, Plumpton, Sussex. Graduated London December 20th, 1895; Fellowship October 30th, 1902. Died January 7th, 1944; aged 75 years.

Mulvey, William Snowball, O.B.E., T.D., F.R.C.V.S., Lt.-Col. R.E. (S.R.), Hon. Vety. Lieut. (Army), 37, Baddow Road, Chelmsford. Graduated London March 31st, 1897. Fellowship May 10th, 1902. Died February 1st, 1944.

Parker, Christopher, M.D., M.R.C.S., L.R.C.P., L.F.P.S.G., L.R.C.P.S. ED., L.M., M.R.C.V.S., D.V.S.M., 10, Village Way, Willesden, and Berrier, Penruddock, Penrith, Cumberland. Graduated London, December 20th, 1922. Died January 23rd, 1944; aged 66 years.

Major A. L. Farrant, F.R.C.V.S.

Many years ago, Major Farrant, whose death we regret to record above, practised as a veterinary surgeon in the East Grinstead district. Later he joined the Royal Horse Artillery, serving in the South African War. For a time he was a veterinary instructor in Demerara. At the commencement of the Great War he joined the Canadians and returned to this country. After demobilisation he practised as a veterinary surgeon in Brighton and it was at this time that he commenced lecturing under the East Sussex County Council. In this connection, Mr. R. H. B. Jesse, Director of Agriculture, writes of him: "On the opening of the East Sussex School of Agriculture in 1926 Major Farrant served as a lecturer to the students and continued this work practically up to the date of his death. After his long connection with veterinary science in the county his death is greatly regretted amongst the students and those who knew him best."

LT.-COL. W. S. MULVEY, O.B.E., T.D., F.R.C.V.S.

We have also to announce, with much regret, the death of Colonel W. S. Mulvey, of Chelmsford, which took place on Monday last after a fortnight's illness initiated by an attack of influenza.

Colonel Mulvey, who enjoyed a wide reputation, particularly as a skilful equine practitioner, followed his father in the well-known Chelmsford practice and was later in partnership with Mr. Aldis, of Dunmow. He had been a member of the Council of the Royal College since 1934, and was keenly interested in the work of the Examination Committee—an interest doubtless originating from the fact that his father, Mr. W. J. Mulvey, was Chairman of that Committee for many years. The latter, it may be recalled, was also Treasurer of the Royal College and, among the prominent positions he occupied in many spheres, Mayor of Chelmsford, being Chairman of the Public Health Committee for a long period. Colonel Mulvey had officiated as an Examiner for the R.C.V.S. Membership Diploma.

He was County Veterinary Officer for N.A.R.P.A.C. and the Farm Livestock Emergency Service and did much to promote the efficiency of these organisations in the highly vulnerable area under his charge.

Colonel Mulvey was an active member of the British Legion, who arranged the military funeral which took place at Chelmsford Cathedral yesterday (Friday, February 11th) at 2 p.m., when President and Council of the Royal College of Veterinary Surgeons were represented by Lt.-Col. J. W. Brittlebank.

To Mrs. Mulvey and the two daughters we extend deep sympathy in their bereavement.

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PERSONAL

Birth.—LAUDER.—On February 4th, 1944, to Margaret, wife of J. S. J. Lauder, M.R.C.V.S., 37, Acacia Avenue, Hale, Cheshire—a daughter.

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Appointment.—The appointment in the Colonial Veterinary Service is announced of Mr. A. W. Vaughan, M.R.C.V.S., as Veterinary Officer, Jamaica.

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University of Cambridge.—The degree of Doctor of Philosophy has been conferred upon Mr. James Keppie, B.Sc. (EDIN.), M.R.C.V.S., of Fitzwilliam House.

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The Coldlite Vaginal Speculum.—In connection with the article on this instrument published in our issue of January 29th, the Editorial Committee feels that mention should be made of the fact that the veterinary application of the vaginascope was first demonstrated by Mr. Oliver G. Jones, M.R.C.V.S., of Camberley, at a meeting of the Central Veterinary Society on May 7th, 1942 (*Vet. Rec.* **54**, page 475), and subsequently to the Survey Committee of the N.V.M.A. at Cambridge on June 13th, 1942.

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The D.V.S.M. Course.—Dr. W. R. Wooldridge writes: "My attention has been called to the fact that the obituary notice which I submitted to *The Veterinary Record* may give rise to the impression that Professor Topley originated the D.V.S.M. course at Manchester. This implication was not intended, for it is well known that this course was started by Professor Delepine and Messrs. Brittlebank and Wm. Woods."

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NUTRITION SOCIETY

The eighteenth scientific meeting (tenth of the English Group) of the Nutrition Society was held on Saturday, February 5th, at the London School of Hygiene and Tropical Medicine, the subject being "Budgetary and Dietary Surveys of Families and Individuals. Part 1." There was a good attendance, and many of the veterinary members were present. Sir John Orr, F.R.S., assisted by Dr. John Hammond, F.R.S., took the chair. Papers were read by Mr. A. G. Jones (Ministry of Food), Dr. E. R. Bransby (Ministry of Health), Mr. F. le Gros Clark (Children's Nutrition Council), Mr. L. Moss (War-time Social Survey), Professor M. Greenwood (London School of Hygiene), Mr. D. Caradog Jones (University of Liverpool) and Professor A. L. Bowley (Institute of Statistics, Oxford). A full report of these, and of the ensuing discussions, will eventually appear in the *Proceedings*. One important forecast was repeated, *viz.*, that we need to increase milk production by 65 per cent. and meat production by 25 per cent., in order to raise the national dietary to satisfactory levels.

Members of the Nutrition Society have been invited to attend the third meeting of the Comparative Section of the Royal Society of Medicine's symposium on "Limitations and Uses of the Comparative Method in Medicine." As announced in last week's issue of *The Veterinary Record*, this meeting ("Nutrition and Endocrinology") will be held at 2.0 for 2.15 p.m. at the Royal Society of Medicine, 1, Wimpole Street, W.1, on Wednesday, February 16th. Dr. J. T. Edwards, M.R.C.V.S., will take the chair, and the openers will be Dr. H. H. Green for nutrition, and Dr. S. J. Folley for endocrinology. All members of the veterinary profession are invited.

A. N. W.

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EDUCATION FOR THE VETERINARY PROFESSION

In its issue of January 8th, *Nature* (**153**, 35-38) takes the occasion of its reference in the same number to some of the addresses given at the N.V.M.A. Annual Conference last September to devote the first article to the subject of education for the veterinary profession. These addresses, and the discussions which followed them (observes *Nature*), make it clear that the veterinary profession is—and always must be—of fundamental importance to the health of man and to the progress of his civilisation. In times like our own, when the basic importance of nutrition is being so often and so rightly emphasised by responsible authorities all over the world, it will scarcely be denied that without successful agriculture our post-war reconstruction will not succeed; and it will not be denied that the key to successful agriculture is a fertile soil. An important condition of soil fertility is the maintenance of a healthy livestock to fertilise it. Both the veterinary surgeon and the farmer are, therefore, key men of the future. They must always work in collaboration.

These fundamental conditions of successful agriculture have been recognised in recent years by the Ministry of Agriculture and by the Agricultural Research Council. Some years ago these bodies established a network of interacting links between the farmer and the veterinary surgeon on one hand and, on the other, between the farmer and experts in botany, soil science, genetics, farm economics, nutritional science and other branches of scientific enquiry which directly or indirectly affect the production by the farmer of the national food supply. These experts work either in agricultural institutes established and maintained by the Government, or in similar institutes which are attached, sometimes by the financial link only, to the universities. In these institutes or at other key points in Great Britain a number of advisory officers have been stationed by the Ministry of Agriculture, and it is the duty of these advisory officers to keep in touch with the farmers and to interpret to them the results of scientific research. Veterinary surgeons constitute one group of these advisory officers; and they, in the course of their work, bring not only the farmer but also the veterinary surgeon into relationship with the work of the universities. There is nothing in this scheme to bring the veterinary surgeon into relationship with the other great profession which deals with national health, namely, the medical profession; but there is no doubt that the scheme has greatly benefited the farmer and the veterinary surgeon and also the national production of food.

If, however, the farmer needs the veterinary surgeon to maintain his livestock for the purpose of fertilisation of his soil and for crop-production, he needs him also to maintain the health and genetical constitution of a livestock which is in itself the raw material of our considerable industry in animals and their products. The value of this industry is estimated by the (immediate past) President of the National Veterinary Medical Association at some £200,000,000 a year. British livestock has, moreover, formed the nucleus of the best herds and flocks of the Dominions overseas, of the Americas and of many other countries; because of the excellence of this stock, Great Britain has been called the stud farm of the world, and our trade in livestock exported for breeding purposes only has been a valuable one. Our breeding stock is in the opinion of some experts, still in good condition, in spite of the difficulties of four years of war. Expert opinion, however, agrees with the Minister of Agriculture that this is not true of the general livestock in our fields. If this is so, it is not the fault of the veterinary profession, which works manfully against the difficulties of war to maintain the health of all our domesticated animals. The profession is not a large one. The President of the National Veterinary Medical Association (*Vet. Rec.*, **55**, 395, 1943) states that there are less than 3,000 active veterinary surgeons in Great Britain to-day, about one-third of whom man the State Veterinary Service or hold other public, educational or similar whole-time appointments, the remainder being in private practice. They have by their constant vigilance so reduced the risk of the major rapidly spreading epidemics of disease in farm animals that it is negligible in Great Britain and in those of our Colonies where veterinary surgeons have been able to tackle diseases of this kind on their own responsibility. Losses from disease are nevertheless considerable in all countries. The President of the National Veterinary Medical Association estimates that they cost Great Britain £30,000,000 a year. To lessen this loss the veterinary profession is doing all that it can with the resources and facilities placed at its disposal. It has performed, and daily performs, many dull and exacting and unspectacular routine tasks of health supervision,

meat inspection and the like. It is clear that its education and its general status is a matter of public importance. A brief review of its organisation will help in understanding its position in relation to national affairs and the general trend of changes in this position which have either occurred recently or have been proposed for the future.

When John Hunter sponsored the foundation of the Royal Veterinary College of London, he began a process of education in animal health which will, if we read the signs of the times correctly, proceed to the position which responsible authorities desire, namely, the incorporation of veterinary education in a general scheme for the control of both animal and human health. (Here follows a résumé of the educational organisation of the profession) . . . In addition to these opportunities to advance his education and broaden his outlook, the modern veterinarian may look for aid to the funds and wise direction of the Veterinary Educational Trust. This trust, which was founded in 1942, was the subject of a leading article in these columns at that time (*Nature*, **150**, 500, 1942). We then commended the aims of its founders, namely, the creation of an animal health organisation, together with the provision of scholarships, fellowships and other aids which would do much to provide veterinarians with adequate education and opportunities to do their work; for the veterinarian is, we then insisted, one of the key men in our national affairs. *The Times*, *The Field*, the *Farmer's Weekly* and other far-seeing and well-informed authorities agreed with us then that the new type of veterinarian who has come into the field must have the best possible training and mental equipment. Great Britain must no longer be reproached, as it is still being reproached, for its continued failure to accord to its veterinarians the status and educational facilities which are provided as a matter of course by other countries.

This brief outline of the existing veterinary education will, however, make it clear that events are moving slowly in the direction advocated in the leading article already referred to. Veterinary education is still too far divorced from the universities, but a nucleus of close collaboration with them exists; the existing system segregates the veterinary student and the qualified veterinarian from university workers, but it ensures a uniform standard in its examinations, and this is denied to the medical man and to some other professions. Whether this uniformity is worth the price paid for it in the dissociation, not only of veterinary students, but also of their teachers, from university life and work it is not our purpose to consider. It is pertinent, however, to direct attention to one aspect of this dissociation—its tendency to hinder the natural contacts beween the work of the veterinary surgeon and that of the medical man.

Upon this point and upon the desirability of drawing together these two great professions by means of some educational scheme a great deal could be said by those veterinary surgeons and medical men who agree that it could do nothing but benefit both professions. No other professions are so closely connected as these. Both study the normal and deranged health of animals; both are concerned with the control of diseases which, like tuberculosis, trypanosomiasis, anthrax and others, are communicated to man from his domesticated animals; both are concerned with the production, in adequate quantity and quality and in freedom from disease, of basic foods such as eggs, milk and meat; both have made outstanding contributions to our knowledge of animal morphology, physiology and pathology and to bacteriology and the control of disease. Some men have, indeed, expressed their realisation of the common aims of the two professions by acquiring the qualifications necessary to both; and the Royal Society of Medicine, when it established a section of comparative medicine, the proceedings of which are conducted jointly by medical men and veterinary surgeons, expressed its belief in the close co-operation of these two professions.

This co-operation, like the general collaboration between the veterinary surgeon and workers in other branches of scientific enquiry to which we have already referred, is, in fact, increasing in our chief centres of teaching and research. It is not however, close enough. It ought to be an active, natural liaison. We say liaison because no one would propose that a closer association than this is possible. It would not be possible, even if it could be shown to be desirable, to educate the two professions in the same classes. The first year of their instruction can be so passed. In point of fact, in Edinburgh all students of Surgeons Hall and of the Dental College of Edinburgh are, at the request of their respective deans, doing their first-year physiology, histology and biochemistry at the Royal (Dick) Veterinary College during the war; but as soon as the student goes on the study of anatomy and physiology, the special requirements and wider scope of the veterinary course make it necessary to give him special classes in the anatomy and physiology of the domesticated animals. He requires to know how to manage and care for these animals; and this is in itself, a big undertaking, requiring the provision of a farm and a field station; it is, indeed, one of the major difficulties of veterinary education to-day. The veterinary student further requires, as his instruction proceeds, more and more instruction over and above that given to the medical student, who deals with one kind of animal only. No medical school could, for example, provide the clinical material which is essential for the teaching of the diagnosis and treatment, whether this be medical or surgical, of sick animals and for the teaching of veterinary obstetrics. The provision of this essential clinical material is, in fact, another major difficulty of modern veterinary education. It calls for the provision of veterinary hospitals at every veterinary teaching centre. It must be obvious that efficient veterinary education requires its own specially trained teachers and its own independent buildings. This need not mean, however, that an administrative scheme could not realise a close association between the students preparing to enter both the medical and the veterinary professions. It could with advantage require that medical and veterinary students should each utilise to the full the courses of instruction given to the other.

We thus reach the natural culmination of that educational process which began with the foundation of the veterinary teaching colleges. At the present moment the Loveday Committee is reconsidering on behalf of the Government the recommendations it made in 1938 for the improvement of veterinary education; at the same time the country is being told by the medical and lay Press something of the profound reorganisation of the medical profession which is in progress. It is true that this medical reorganisation appears on the surface to affect chiefly the practical treatment by the doctor of his patients, but it would be short-sighted to suppose that a revolution in practice of this order will not affect profoundly the education and, indeed, the whole outlook of the medical man. He is to become, it is clear, much more of a public servant and much less of an individual who practises, with whatever nobility of purpose, for his own private profit. It may be that a similar change will affect all of us, in one degree or another. The veterinary surgeon is already able to do public service by entering the Colonial veterinary services or the State veterinary service at home.

While changes so fundamental are being considered and planned in both the veterinary and the medical professions, it must surely be wise to consider also whether their education, at least, if not their practice, cannot be planned as a natural whole. Their basis is the same their principles are the same, so the end product of their education should be the same. Both professions should study to produce an alert, scientific, public-minded individual whose altruistic outlook moves him to choose as his life-work the science and art which seeks to relieve the sufferings of man and animals and to save their lives when they are attacked by disease. The best way of doing this is, as was pointed out in our leading article a year ago, to study to prevent the occurrence of disease rather than to try to cure it after it has occurred; and this is, in fact, the policy of both the veterinarian and the medical man of to-day. It would be difficult to find a better or a more powerful bond between them.

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"THE VETERINARY OUTLOOK"

Our readers will be interested to read the following editorial comment, headed as above, made by *The Lancet* in its issue of January 29th, on factors in the future development of the veterinary profession as they appear to a leading contemporary in human medicine.

The coming of a second world war, with a consequent shortage of food, has again made the people of these highly industrial islands realise that their existence ultimately depends on the soil and the livestock it carries. Arable farming and livestock production are interdependent, but the importance of the latter in Great Britain is shown by the fact that it accounted for 70 per cent. of the gross agricultural income of £265 million before the war. The health of livestock is a correspondingly vital interest.

Foot-and-mouth disease, though still troublesome, is much better controlled in this country than on the Continent, and the days are long since past when epidemic diseases such as rinderpest and contagious bovine pleuropneumonia decimated our cattle population. The eradication of these acute infections is largely attributable to the slaughter policy long advocated by veterinary authorities and at last adopted in the latter part of the last century; though part of the gain in health is no doubt a result of cattle being no longer kept in town cowsheds of the type described by Byng in 1847:

> "Forty cows are kept in them, two in each seven feet of space. There is no ventilation, save by the unceiled tile roof, through which the ammoniacal vapours escape. . . . Besides the animals, there is at one end a large tank for grains, a storeplace for turnips and hay, and between them a receptacle into which the liquid manure drains, and the solid is heaped . . . the stench thence arising (is) insufferable."

To-day, however, the epidemic diseases have been replaced in importance by less spectacular chronic infections that are harder to control. The National Veterinary Medical Association has estimated that mastitis, contagious abortion and sterility deprive the country of roughly 200 million gallons of milk per annum, while the death of calves and cost of replacing cows mean a loss of over £5 million. In addition there are the losses from tuberculosis and Johne's disease. In a presidential address to the N.V.M.A. last September Mr. W. R. Wooldridge, PH.D., put the total cost of insidious disease of cattle at not less than £30 million.[1] While most emphasis is rightly placed on diseases of the dairy cow, the wastage from disease and bad management among pigs, sheep and poultry is also considerable.

Eighteen months ago, in an attempt to reduce disease in dairy cattle, a scheme was launched jointly by the N.V.M.A. and the National Farmers' Union with the support of the Ministry of Agriculture. Under this scheme the veterinary practitioner agrees to advise on the control of specified diseases, and treat them, for an annual fee of 10s. per cow. A total of 6,568 contracts covering 269,839 cows and heifers have been notified. That many practitioners are finding the work of great interest there can be no doubt, but many also look upon it as a contribution to the war effort which cannot be continued afterwards on the present financial basis. The increasing appreciation by the farmer of the veterinary surgeon's purpose and difficulties does something to lighten the heavy labour involved and a sense of joint responsibility for the health of the herd has been developed. Unfortunately, however, the means for controlling the diseases in question are by no means perfect. Though the live vaccine against contagious abortion[2] seems to be giving good results, the methods for controlling or treating the various forms of mastitis are sometimes laborious and not always effective. A potent and readily available chemotherapeutic agent would be of great value, but further research is needed before this intractable disease is fully understood and controlled. The same is true of sterility, which a number of whole-time veterinary officers are studying under field conditions. Tuberculosis is not included in the scheme, but the Ministry of Agriculture's veterinary laboratory is now producing an improved tuberculin for testing cattle, and intensive work is being done there and elsewhere on the various problems of tuberculin-testing. At present there are 16,146 herds attested as free from tuberculosis, which represents real progress. Yet among the few things that farmers from the U.S.A. criticised when visiting this country were the relatively small extent to which such diseases as contagious abortion and tuberculosis have been eliminated from dairy herds, and the cross-breeding and poor quality of many commercial animals. The white paper outlining Measures to Improve the Quality of the Nation's Milk Supply,[3] while proposing compulsory pasteurisation on a limited scale which will no doubt be extended, attaches great importance to the upgrading of the nation's dairy herd and the control of disease. Arrangements are being made, as fast as the shortage of veterinary personnel will allow, to increase the number of inspections of herds, and it is also intended that veterinary officers shall become responsible for the conditions under which milk is produced. It is felt that these inspections, combined with the scheme for the control of diseases of dairy cattle and the Milk Testing and Advisory Scheme, will do much to raise standards.

These projects may bear little fruit, however, unless future veterinary surgeons are trained for their wide duties. In India and South Africa the central veterinary institutes at Muktesar and Onderstepoort are responsible for work not only on disease control but also on animal husbandry and animal nutrition. The resultant comprehensive outlook has led to big advances; but, although the research and teaching institutions throughout the Empire have been staffed mainly by men from the home veterinary colleges, the latter still have no adequate facilities for the larger sphere of work. In its first report the Loveday Committee on Veterinary Education showed itself well aware of the significance of these subjects, and now that it has been recalled it will no doubt explain the need further; for in veterinary as in human medicine the value of good environment and sound nutrition is increasingly apparent. Facilities at the veterinary colleges for research in animal physiology, nutrition and animal husbandry, as well as pathology, would serve the double purpose of adding to our knowledge and providing teaching material and inspiration for students: the specialised research institution does not enlighten students in this way. It is, therefore, particularly pleasing that the main objects of the Veterinary Educational Trust, the formation of which was announced last year by Wooldridge,[4] are to provide increased facilities for teaching and research at the colleges, so that teachers will be better able to carry on their own original investigations. The trustees hope to raise at least £1,000,000, which should enable them also to offer scholarships for post-graduate study.

The maintenance of healthy livestock and the inspection of livestock products by men well trained in animal husbandry and animal pathology are essential contributions to human health. How the veterinary profession will be organised to fulfil these tasks is uncertain; but it is interesting to find Wooldridge speaking of the possible formation of an Animal Health Corporation, reminiscent of proposals for the future organisation of medicine. Whatever the final solution, it is certain, as he said, that the time is opportune for devising and adopting a settled policy to improve animal health and human nutrition and to give the veterinary profession its rightful place in national welfare and council.

(1) *Vet. Rec.* 1943, **55**, 395.
(2) *Ibid.*, 1942, **54**, 175.
(3) See *Lancet*, 1943, ii, 78.
(4) *Ibid.*, 1943, **54**, 403.

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SCHEME FOR THE CONTROL OF DISEASES OF DAIRY CATTLE

STATEMENT SHOWING THE NUMBER OF UNDERTAKINGS NOTIFIED TO THE MINISTRY OF AGRICULTURE DURING THE MONTH ENDED JANUARY 31ST, 1944

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
ENGLAND					
Bedford	—	41	41	939	510
Berks	2	96	98	3,429	2,157
Bucks	—	88	88	3,264	1,732
Cambridge	—	16	16	371	159
Chester	3	394	397	12,945	4,436
Cornwall	—	8	8	158	105
Cumberland	1	62	63	1,596	1,402
Derby	6	292	298	8,703	4,819
Devon	11	218	229	3,710	2,190
Dorset	2	73	75	2,295	1,184
Durham	5	260	265	5,880	2,047
Essex	1	250	251	8,816	5,114
Gloucester	1	97	98	2,910	1,564
Hampshire	3	379	382	11,130	7,079
Hereford	—	29	29	444	216
Hertford	1	70	71	2,223	1,294
Hunts	—	14	14	470	311
Isle of Ely	—	2	2	26	54
Isle of Wight	—	17	17	309	150
Kent	2	145	147	3,569	1,960
Lancs	4	215	219	6,375	1,965
Leics	4	86	90	2,397	1,616
Lincs (Holland)	—	3	3	25	11
Lincs (Kesteven)	—	24	24	325	151
Lincs (Lindsey)	5	87	92	1,768	1,047
Middlesex	—	15	15	605	289
Norfolk	2	186	188	5,667	3,794
Northants	—	80	80	2,142	1,464
Northumberland	1	58	59	2,170	1,029
Notts	6	146	152	3,551	2,032
Oxford	—	41	41	1,243	1,065
Rutland	—	9	9	160	99
Salop	5	266	271	8,243	3,909
Soke of Peterborough	—	1	1	37	31
Somerset	8	215	223	5,856	2,631
Staffs	5	203	208	6,092	3,186
Suffolk, East	1	97	98	2,261	1,632
Suffolk, West	—	50	50	1,068	650
Surrey	—	116	116	3,236	1,448
Sussex, East	3	187	190	4,951	2,779
Sussex, West	6	128	134	3,679	2,093
Warwick	1	132	133	3,327	1,909
Westmorland	—	19	19	522	587
Wilts	3	85	88	3,636	1,642
Worcester	2	152	154	3,266	1,499
Yorks, E.R.	1	95	96	1,468	827
Yorks, N.R.	2	117	119	2,432	1,464
Yorks, W.R.	6	261	267	6,750	2,581
WALES					
Anglesey	2	41	43	758	559
Brecon	—	9	9	199	108
Caernarvon	1	113	114	1,858	989
Cardigan	2	22	24	407	305
Carmarthen	4	222	226	4,009	2,040
Denbigh	—	60	60	1,211	654
Flint	1	112	113	2,475	1,078
Glamorgan	3	86	89	1,473	535
Merioneth	—	10	10	126	63
Monmouth	—	51	51	1,207	702
Montgomery	—	17	17	307	217
Pembroke	1	94	95	1,718	1,137
Radnor	—	—	—	—	—
TOTALS	117	6,462	6,579	172,187	90,300

Notes.—(1) Operative periods of undertakings: 1 year, 1,485; 2 years, 548; 3 years, 4,546. (2) Undertakings renewed for a further period: 1 year, 357; 2 years, 91; 3 years, 95. (3) Undertakings not renewed at end of operative period, 171. (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings and do not include undertakings renewed for a further period. Undertakings which have been cancelled or not renewed are not included in the figures for previous notifications.

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
SCOTLAND					
Aberdeen	—	26	26	1,104	376
Angus	—	19	19	751	315
Argyll	—	5	5	91	74
Ayr	—	41	41	1,372	1,035
Banff	—	4	4	121	42
Berwick	—	2	2	53	22
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan ..	—	5	5	179	148
Dumfries	—	13	13	686	559
Dumbarton	—	3	3	105	86
East Lothian ..	—	3	3	145	88
Fife	—	35	35	1,276	612
Inverness	1	8	9	290	166
Kincardine	—	5	5	231	126
Kinross	—	2	2	39	20
Kirkcudbright ..	—	11	11	553	409
Lanark	1	18	19	698	470
Midlothian	—	1	1	44	69
Moray	—	—	—	—	—
Nairn	—	1	1	14	—
Orkney	—	—	—	—	—
Peebles	—	5	5	101	45
Perth	—	35	33	752	428
Renfrew	—	9	9	384	297
Ross-shire	—	3	3	80	65
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	—	26	26	795	622
Sutherland	—	4	4	102	64
West Lothian ..	—	1	1	23	18
Wigtown	—	26	26	1,775	883
Zetland	—	—	—	—	—
TOTALS ..	2	309	311	11,773	7,039

Notes.—(1) Duration of undertakings: 1 year, 42; 2 years, 38; 3 years, 231. (2) Undertakings renewed for a further period (included in column 2 of statement): 1 year, 16; 2 years, 3; 3 years, —. (3) Undertakings expired and not renewed (not included in column 2 of statement): 53. (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings.

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SCIENCE AND THE STATE: CABINET REPRESENTATION ADVOCATED

Lord Samuel, presiding at the recently held annual luncheon of the Parliamentary and Scientific Committee which was attended by four Ministers of State—Mr. Hudson, Lord Portal, Sir William Jowitt and Lord Woolton—together with many other members of both Houses and leading representatives of science and industry, put forward the proposal that the Lord President of the Council should exercise the functions of Minister of Science in the Cabinet.

We had in this country no Minister of Science, said Lord Samuel. The Lord President of the Council did perform some of the functions of such a Minister, but had no properly developed Department to assist him. He did not advocate the creation of a new Ministry with a new title, but he suggested—for consideration in due course and not for immediate decision—that the President of the Privy Council should have his functions enlarged and his Department expanded, that he should be given an intelligence or information department and be continually watchful of the developments of science here and abroad, and see in what way our national use of them should be secured. He should be the representative of science as such in the Cabinet and among other departments.

Lord Samuel said that the Parliamentary membership of the committee had doubled in the past year and the member-associations had increased by nearly 50 per cent. In the same time their activities had greatly increased. They had now in preparation another important report—on taxation and its effects on the development of scientific research.

Lord Woolton, Minister of Reconstruction, said that the growth of public interest in the application of scientific discovery to the affairs of everyday life was one of the most encouraging features of our times. The speed of development of that interest had, he believed, out-run either our administrative capacity or, perhaps, our commercial capacity. The needs and the demands of the public were greater than those that were being met.

"Let us," Lord Woolton continued, "encourage those who by their researches are trying to make to-morrow better than yesterday, and let us have the courage to try out new methods and encourage new ideas and new inventions."

Sir Raymond Streat, Chairman of the Cotton Board said that war had been challenging science for the last four and a half years; let us hope that soon science would be challenged no less imperatively by an active social conscience and by a community with enough leisure and education to make good use of improved facilities for living.

"MILK PRODUCTION AND LIVESTOCK PROBLEMS"

In the course of his address on the above subject at the Royal Institution on February 1st, Professor H. D. Kay, Director of the National Institute for Research in Dairying, Reading, said that he thought that an increase to 700 or 750 gallons per lactation over the pre-war average yield of about 500 gallons should be looked for from the modern satisfactory dairy cow. At present the milking life of the average cow—about four years—was lamentably short, and there was no good reason why it should not be put up to at least seven or perhaps doubled: a dairy cow did not reach her peak until the fifth lactation.

With regard to artificial insemination—the most promising method of stock improvement that breeding history had known—the great difficulty was to get proven bulls, *i.e.*, those capable of transmitting good milk yields and qualities to their daughters, and it took six years to find out whether a sire could do that, after which he had only a comparatively short working life left. With artificial insemination, though, a single ejection of semen could be used for impregnating perhaps 15 or 20 cows, although the usual figure was not so high. That showed the possibilities of the process. At the Shinfield centre they already had 4,500 cows enrolled and 1,500 had been inseminated.

Their first cow bred by insemination showed an average milk yield of 700 gallons, and was a good animal in all respects. Prospects were indeed promising. Interesting, too, was the fact that the average insemination rate to get a cow into calf was 1·7, which compared with an average of about two with natural insemination in the ordinary dairy herd. Difficulties regarding the still wider use of artificial insemination centred round the fact that it was not worth while if sperm had to be kept more than 72 hours at present, but a method of keeping sperm useful for up to seven days had been reported and if successful would be of great help.

Dealing with future possible methods of increasing milk production, Dr. Kay said the use of pituitary and ovarian gland hormones produced astonishing udder growth and development in the case of maiden and barren heifers, and much research work was going on in this connection. High milk yields and as much as 50 per cent. fat content increase in the milk as compared with normal had been obtained. Subcutaneous injection was the usual method practised, but obviously was not suitable for commercial dairy herds. What was wanted was a successful method of feeding hormones. With stilboestrol, similar results had also been obtained. Within two to three weeks after injection maiden heifers had come into milk and had maintained their lactations. In one case in 32 weeks a yield of 485 gallons was obtained. With stilboestrol fed through the mouth, however, effects had not been so marked. Another method of stimulating milk production was through iodinated proteins which followed up the work of thyroid injection.

It had been known as far back as 1935 that thyroid injections tended to increase milk yield and the development of synthetic thyroid substances opened up further possibilities.

The effect of numbers of the new synthetic productions was still in a comparatively early stage of investigation, however, though results tended to show that, provided cows were fed accordingly—they needed more food to compensate for increased milk yields—there was no evidence that either health or breeding were impaired.

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The grant of a temporary bonus to benefit the small milk producer is a very welcome recognition of some of the hardship inseparable from production on uneconomic farms. It is not the fault of the farms that they are uneconomic, but that the occupants have been diverted by sheer necessity into a branch of food production for which the land was not suitable.—*Farmer and Stock-Breeder.*

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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THE ONE-PORTAL SYSTEM AND THE COMING R.C.V.S. ELECTIONS

Sir,—At the Annual General Meeting, N.V.M.A., held in September last, a large majority of the members present expressed themselves with no uncertain voice in regard to any attempt, from within or without the profession, to curtail the powers at present held by Council, R.C.V.S.

It has been published that the annual statutory elections to the Council which have been suspended during the war, are to be resumed, namely, in June next.

Several grave issues confront the profession. It need hardly be said that it is the duty of every voter to ensure the election of those candidates in whom he will have the highest degree of confidence to face these issues on his behalf.

Among these issues, the retention and strengthening of the one-portal system of entry into the profession may fairly be regarded as one of the most important. Indeed, viewing the prospects that loom ahead, and the measures that may be pressed upon authority to readjust the training of the veterinary surgeon to comply better with modern needs, each candidate for the R.C.V.S. election might reasonably be invited to declare plainly, as the one outstanding issue at this election, his own attitude towards the one-portal system.

It has now become clear that the profession as a whole will brook no curtailment of those functions which have been exercised by Council, R.C.V.S., to secure a high and uniform standard of entry into the profession.

There are among us—and we believe them to be in the large majority—those who claim that a vigorous veterinary science and the traditional veterinary art will always stand in need of being welded judiciously together. Furthermore, history and experience prove that this pursuit can only be satisfactorily practised by a body of people who, in the first place, are trained accordingly and reach standards of proficiency that can be assured only by direct examination by an authority such as our own Governing Body, and who, in the second place, are subsequently disciplined as a profession under that same Body. These qualifications, we contend, are essential, whether from the standpoint of private practice or the State employ, to meet properly the needs of the public.

Yours faithfully,
J. T. Edwards.

* * * * *

Sir,—At this moment nominations are going forward of members to fill the vacancies on Council, R.C.V.S., and the electorate (especially overseas) will soon be casting their votes. There seems to be one tremendously important point at issue just now—if one may judge from the recent discussions at meetings of the N.V.M.A.—and that is the continued integrity of the powers and privileges of our governing body.

The conditions under which veterinary degrees may be granted by universities in the future would appear to involve grave danger to our cherished one-portal system.

Whilst no sane-minded man could object to a closer association with universities, we *must* provide, in every possible way, against the danger foreseen by so many of us, that the government of the profession, for the profession, by the profession may become so emasculated as virtually to cease.

The full rights, powers and privileges granted by Royal Charter to our College must be preserved intact, and I believe it to be the duty of all who seek election to inform the electorate of their views upon this vital question of policy.*

Yours faithfully,
658, Finchley Road, N.W.11. Hamilton Kirk.
January 29th, 1944.

* * * * *

Sir,—This is the Centenary year of the R.C.V.S. and no doubt there will be celebrations and other incidents to mark the occasion. The year will also witness the resumption of the statutory elections to the Council of the R.C.V.S.

So by a return to a state of true democracy the profession will reassert its right, temporarily suspended owing to the war, of electing its rulers by the free vote of their peers. Every member is entitled to vote and it is his or her bounden duty to do so, for the Council is the guardian of the rights and privileges of the profession and its guide and mentor. If each member takes advantage of this privilege and registers his or her vote we can be sure that those who are honoured by election will represent truly the majority of the profession and so give a true picture of the views of the electorate. Grave issues confront us and the fate of the long cherished one-portal system of entry is an object of prime importance. There are those within and more especially without the profession who would assail our fortress on the pretence that it has outlived its usefulness. The strength of our fortress and its ability and indeed right to survive depend upon the material of which it is constructed, its efficiency as regards the purpose for which it was devised, its response to conditions inherent upon changing circumstances, the quality of its products and its resistance to attack from any quarter.

*Addresses of candidates for election to Council, R.C.V.S., *limited to 250 words*, will be published together in one issue in due course.—*Editor.*

The recent annual general meeting of the N.V.M.A. can be said to represent a true cross-section of the views of the majority of the profession and the overwhelming vote which was registered in support of the R.C.V.S. and its one-portal system should serve as a spur to remind members what is at stake and of the great responsibility they assumed on graduation.

Yours faithfully,
J. McCunn.

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USE OF *BRUCELLA ABORTUS* VACCINE

Sir,—In your issue, November 13th, 1943, Major F. R. Roche-Kelly cites a possible pitfall in use of *Brucella abortus* vaccine on young heifers.

So long as the live cultures are used for Bang immunisation there is always a possibility of non-viability despite every precaution exercised by laboratory or practitioner. For this reason we find it advisable to run a confirmatory blood test on calves within 30 days after injection of vaccine. All should be positive. Any negative animals are revaccinated.

Work in the state of New Jersey indicates that intradermal injection—into the caudal fold—of 0·2 c.c. stock strain 19 *Brucella* vaccine results in as good a grade of immunity as does 5 or 6 c.c. given subcutaneously. This work needs further confirmation in the field. If it proves correct it will result in an economy of vaccine and a more professional technique of administration.

With sincere best wishes.

I am,
Yours faithfully,
239 E. 72nd Terrace, A. H. Quin.
Kansas City 5, Mo.
December 8th, 1943.

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THE "COLDLITE" VAGINAL SPECULUM

Sir,—This instrument, which is fully described in *The Veterinary Record* for January 29th, is one which nobody engaged in bovine practice can afford to do without, and its initial high cost is very soon more than repaid. I can fully endorse all that has been written about it, and I have found it equally useful in the mare.

With other forms of specula one has to rely on a hand torch or headlamp to secure illumination—both of which are unsatisfactory.

The new speculum reflects the highest credit on the manufacturers and the veterinary surgeon who, I know, has gone to great pains to perfect it. It should convince one and all that a speculum is not superfluous, and more especially those who used to contend that it only conveyed a "pretty picture," and that it was wiser to rely upon "the sense of touch."

Yours faithfully,
"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.
January 31st, 1944.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Jan. 1st to 15th, 1944 ...	12	1	1	22	21
Corresponding period in—					
1943 ...	14	7	—	9	13
1942 ...	12	—	2	31	14
1941 ...	25	22	—	22	140

Note.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis Order of 1938

The number of animals slaughtered by the Ministry of Agriculture and Fisheries under the Tuberculosis Order of 1938 during the period October 1st to December 31st, 1943, was 3,451.